Claims

[c1]   A method for characterizing a frequency translation device, the method comprising:

supplying a stimulus condition as input to the frequency translation device;

measuring a plurality of intermodulation products in the output spectrum of the frequency translation device resulting from the stimulus condition input, the plurality of intermodulation products further comprising a plurality of sum intermodulation products and a plurality of difference intermodulation products;

establishing a predetermined file format;

storing the plurality of sum intermodulation products and the plurality of difference intermodulation products in a plurality of output files according to the predetermined file format; and

establishing an index file to identify the stored output files, the stored output files identified by the stimulus condition.

[c2]   The method of claim 1, wherein the frequency translation device is a mixer.

[c3]   The method of claim 1,wherein supplying the stimulus

condition further comprises supplying a sweeping stimulus condition.

[c4]   The method of claim 3, wherein supplying the sweeping stimulus condition further comprises supplying an input signal at a predetermined power and frequency and establishing a local oscillator input at a predetermined power and frequency and stepping the input signal and local oscillator power through a predetermined range of values.

[c5]   The method of claim 4, wherein supplying the sweeping stimulus condition further comprises supplying an input signal at a first frequency and a local oscillator input at a second frequency, stepping the input signal power level through a predetermined first range of values, and stepping the local oscillator power level through a predetermined second range of values.

[c6]   The method of claim 1, wherein measuring the plurality of intermodulation products further comprises measuring the amplitude of the intermodulation products.

[c7]   The method of claim 1, wherein measuring the plurality of intermodulation products further comprises measuring the amplitude and phase of the intermodulation products.

[c8]   The method of claim 1, wherein establishing a predetermined file format further comprises establishing a predetermined file format whereby the sum intermodulation products and the difference intermodulation products are stored within the same file.

[c9]   The method of claim 1, wherein establishing a predetermined file format further comprises establishing a predetermined file format whereby the sum intermodulation products and the difference intermodulation products are stored within separate files.

[c10]   The method of claim 1, further comprising assigning a variable to identify the intermodulation product stored as a sum intermodulation product or a difference intermodulation product.

[c11]   The method of claim 10, further comprising storing the assigned variable with the intermodulation product.

[c12]   The method of claim 1, wherein establishing an index file to identify the stored output files further comprises establishing the index file in accordance with a microwave data interface file format.

[c13]   The method of claim 1, further comprising simulating the response of the frequency translation device to a

simulated stimulus condition.

[c14] The method of claim 13, wherein simulating the response of the frequency translation device to a simulated stimulus condition further comprises:

establishing a simulated stimulus condition;

relating the simulated stimulus condition to the index file;

extracting the intermodulation product of interest from the stored data files associated with the simulated stimulus condition; and

displaying a result of the simulation.

[c15] The method of claim 14, wherein the simulated stimulus condition further comprises a simulated sweeping stimulus condition.

[c16] The method of claim 14, wherein extracting the intermodulation product of interest from the stored data files further comprises utilizing interpolation to extract the intermodulation product of interest based on the simulated stimulus condition.

[c17] The method of claim 14, wherein displaying a result of the simulation further comprises displaying a graphical result.

[c18] The method of claim 17, wherein the graphical result is

three-dimensional.

[c19] A method for characterizing and simulating a frequency translation device, the method comprising:

supplying a stimulus condition as input to the frequency translation device;

measuring a plurality of intermodulation products in the output spectrum of the frequency translation device resulting from the stimulus condition input, the plurality of intermodulation products further comprising a plurality of sum intermodulation products and a plurality of difference intermodulation products;

establishing a predetermined file format;

storing the plurality of sum intermodulation products and the plurality of difference intermodulation products in a plurality of output files according to the predetermined file format;

establishing an index file to identify the stored output files, the stored output files identified by the stimulus condition;

establishing a simulated stimulus condition;

relating the simulated stimulus condition to the index file;

extracting the intermodulation product of interest from the stored data files associated with the simulated stimulus condition; and

displaying a result of the simulation.

[c20] A system for characterizing a frequency translation device, the system comprising:

a stimulus supply to supply a stimulus condition input to the frequency translation device;

an output measurement device to measure a plurality of intermodulation products in the output spectrum of the frequency translation device resulting from the stimulus condition input, the plurality of intermodulation products further comprising a plurality of sum intermodulation products and a plurality of difference intermodulation products;

a predetermined file format to store the plurality of sum intermodulation products and the plurality of difference intermodulation products in a plurality of output files according to the predetermined file format; and

an index file to identify the stored output files, the stored output files identified by the supplied stimulus condition.

[c21] The system of claim 20, wherein the frequency translation device is a mixer.

[c22] The system of claim 20, wherein the stimulus condition input is a sweeping stimulus condition input.

[c23]   The system of claim 20, wherein the stimulus supply further comprises a plurality of signal generators.

[c24]   The system of claim 20, wherein the output measurement device is a spectrum analyzer.

[c25]   The system of claim 20, wherein the intermodulation products measured are amplitude values.

[c26]   The system of claim 20, wherein the intermodulation products measured are complex values representing amplitude and phase components.

[c27]   The system of claim 20, the predetermined file format further comprises a storage format whereby the sum intermodulation products and the difference intermodulation products are stored within the same file.

[c28]   The system of claim 20, wherein the predetermined file format further comprises a storage format whereby the sum intermodulation products and the difference intermodulation products are stored within separate files.

[c29]   The system of claim 20, further comprising a variable assigned to identify the intermodulation product stored as a sum intermodulation product or a difference intermodulation product.

[c30]   The system of claim 29, wherein the assigned variable is

stored with the intermodulation product.

[c31] The system of claim 20, wherein the index file is in accordance with a microwave data interface file format.

[c32] The system of claim 20, further comprising a simulation device to simulate the response of the frequency translation device to a simulated stimulus condition.

[c33] The system of claim 32, wherein the simulation device further comprises:
a simulated stimulus condition selector, the selected stimulus condition identifying the index file, the index file identifying and extracting the intermodulation product of interest from the stored data files associated with the simulated stimulus condition; and
a display to display a result of the simulation.

[c34] The system of claim 32, wherein the simulated stimulus condition further comprises a simulated sweeping stimulus condition.

[c35] The system of claim 33, wherein the result is displayed graphically.

[c36] The system of claim 35, wherein the graphical result is three-dimensional.

[c37] A system for characterizing and simulating a frequency

translation device, comprising:

a stimulus supply to supply a stimulus condition input to the frequency translation device;

an output measurement device to measure a plurality of intermodulation products in the output spectrum of the frequency translation device resulting from the stimulus condition input, the plurality of intermodulation products further comprising a plurality of sum intermodulation products and a plurality of difference intermodulation products;

a predetermined file format to store the plurality of sum intermodulation products and the plurality of difference intermodulation products in a plurality of output files according to the predetermined file format;

an index file to identify the stored output files, the stored output files identified by the supplied stimulus condition;

a simulated stimulus condition selector, the selected stimulus condition identifying the index file, the index file identifying and extracting the intermodulation product of interest from the stored data files associated with the simulated stimulus condition; and

a display to display a result of the simulation.